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# Maine Agricultural Experiment Station

BULLETIN No. 142.

APRIL, 1907

## FEEDING STUFF INSPECTION.

14.

*C.S. M. - page 104 of 207*  
*Order of Interstate C.S. Cruden Assn.*

This Bulletin contains the analyses of samples of Feeding Stuffs received from correspondents and collected by the inspectors in the fall and winter, 1906-7, and a discussion of the results of the inspection.

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Requests for bulletins should be addressed to the

AGRICULTURAL EXPERIMENT STATION,  
Orono, Maine.

# MAINE

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### ORONO, MAINE.

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## BULLETIN No. 142.

### FEEDING STUFF INSPECTION.

CHAS. D. WOODS, Director.

J. M. BARTLETT, Chemist in charge of inspection analyses.

#### CHIEF REQUIREMENTS OF THE LAW.

The points of the law of most interest both to the dealer and consumer concisely stated, follow.

*Kinds of Feed Exempt Under the Law.* The law applies to all feeding stuffs *except* the following: hays and straws; whole seeds, meals, brans and middlings of wheat, rye, barley, oats, Indian corn, buckwheat and broom corn, sold separately; wheat bran and middlings mixed together and pure grains ground together.

*Kinds of Feed Coming within the Law.* The principal feeds coming under the provisions of the law are linseed meals, cottonseed meals, cottonseed feeds, pea meals, cocoanut meals, gluten meals, gluten feeds, maize feeds, starch feeds, sugar feeds, dried brewer's grains, dried distiller's grains, malt sprouts, hominy feeds, cerealine feeds, rice meals, oat feeds, corn and oat chops, corn and oat feeds, corn bran, ground beef or fish scraps, foods; poultry foods, stock foods, patented, proprietary and trade-mark stock and poultry foods, mixed feeds other than those composed solely of wheat bran and middlings mixed together or pure grains ground together, and all other materials of similar nature.

*The Brand.* Each package of feeding stuffs coming within the law shall bear, conspicuously printed, the following statements:

The number of net pounds contained in the package.

The name or trade mark under which it is sold.

The name of the manufacturer or shipper.

The place of manufacture.

The place of business of manufacturer or shipper.

The percentage of crude protein.

The percentage of crude fat.

*The Adulteration of Feeding Stuffs.* If any foreign substances are added to whole or ground grain or wheat offals, the true mixture must be plainly marked upon the packages.

*Duties of the Director.* The Director shall in person or by deputy analyze at least one sample of each feeding stuff coming within the requirements of the law, and publish the results with such additional information as circumstances advise. He shall diligently enforce the provisions of the law and, in his discretion, prosecute offenses against the law.

*Penalties.* The sale or offering for sale of feeding stuffs not properly branded, or containing a smaller percentage of protein and fat than are guaranteed, or of adulterated feeding stuffs, is punishable by a fine not exceeding \$100 for the first, and \$200 for each subsequent offense.

#### RESULTS OF THE INSPECTIONS FOR 1906-7.

The last bulletin on feeding stuff inspection was published in April, 1906. Prior to 1904 it had been the custom of the Station to collect a large number of samples of the feeding stuffs offered in the State for the purpose of analyses. With few exceptions the feeding stuffs are running fairly constant in composition, and for the past two years, greater attention has been paid to proper inspection than to the analyses. At least one sample has been drawn of each of the commercial feeding stuffs offered in the State, so far as they have been found by the inspector. There is an evident desire on the part of nearly all of the dealers, large and small, to conform to the requirements of the law, and with the exception of cotton seed meal (see discussion page 104), there is every reason to feel satisfied with the quality of the concentrated commercial feeding stuffs upon the market.

The table on pages 95 to 103 gives the results of the analyses. These results are discussed on pages 104 and beyond. Protein was determined in each sample. Fat was determined in a composite sample of the samples taken by the inspector.

*Analyses of Samples of Feeding Stuffs.*

Name of Feed and Manufacturer or Shipper.	Source of sample.	Protein.		Fat.		Station number.
		Found — per cent.	Guaranteed per cent.	Found — per cent.	Guaranteed per cent.	
COTTON SEED MEAL.						
Extra Prime Cotton Seed Meal.....	C	40.81	38.65	-	-	2248
F. W. Brodie & Co., Memphis, Tenn.						
Cotton Seed Meal.....	O	37.00	41.00	10.15	9.00	2311
H. E. Bridges & Co.						
Extra Prime Cotton Seed Meal.....	O	37.88	38.65	-	-	2440
F. W. Brode & Co.....	O	37.25	38.65	-	-	2446
	O	43.06	38.65	-	-	2456
Average.....	O	39.39	38.65	10.09	-	-
Cotton Seed Meal.....	D	45.63	38.50	-	9.00	2560
Chapin & Co., Boston.						
Cotton Seed Meal.....	D	40.25	41.00	-	9.00	2276
Chas. M. Cox Co., Boston.....	O	39.56	38.00	8.18	9.00	2424
Dixie Brand Cotton Seed Meal.....	C	34.14	41.00	-	9.00	2277
Humphreys-Godwin Co. ....	C	33.31	41.00	-	9.00	2337
	C	35.19	41.00	-	9.00	2338
	C	37.63	41.00	-	9.00	2356
	D	35.19	41.00	-	9.00	2302
	D	38.50	41.00	-	9.00	2406
	O	41.19	41.00	-	9.00	2269
	O	37.06	41.00	-	9.00	2439
	O	36.88	41.00	-	9.00	2443
	O	38.75	41.00	-	9.00	2550
	O	36.88	41.00	-	9.00	2552
Average.....	O	38.14	41.00	8.71	9.00	-
Green Diamond Cotton Seed Meal.....	O	40.50	41.00	-	9.00	2288
Chapin & Co. ....	O	37.75	41.00	-	9.00	2419
	O	37.13	41.00	-	9.00	2421
	O	43.00	41.00	-	9.00	2427
	O	39.94	41.00	-	9.00	2449
	O	39.75	41.00	-	9.00	2470
Average.....	O	39.66	41.00	9.39	9.00	-
Cotton Seed Meal.....	C	38.88	41.00	-	7.00	2505
Hunter Bros. Milling Co., St. Louis.						
Prime Cotton Seed Meal.....	O	41.63	41.00	-	9.00	2546
Hunter Bros. Milling Co., St. Louis.....	O	38.75	41.00	-	9.00	2547
Average.....	O	40.19	41.00	10.98	9.00	-
K. & B. Prime Cotton Seed Meal.....	D	20.75	41.00	-	9.00	2403
Kaiser & Brown, Memphis.....	O	22.25	41.00	-	9.00	2312
	O	19.38	41.00	-	9.00	2417
	O	21.00	41.00	-	9.00	2467
	O	20.63	41.00	-	9.00	2472
Average.....	O	20.82	41.00	5.41	9.00	-
Magnolia Cotton Seed Meal.....	O	36.38	41.00	-	7.00	2465
Chas. M. Cox Co.....	O	32.50	41.00	-	7.00	2479
	O	39.69	41.00	-	7.00	2488
Average.....	O	35.19	41.00	7.94	7.00	-

C. from the feeder; D. from the dealer; M. from the manufacturer; and O. the inspector's sample.



*Analyses of Samples of Feeding Stuffs.*

Name of Feed and Manufacturer or Shipper.	Source of samples.	Protein.		Fat.		Station number.
		Found— per cent.	Guaranteed— per cent.	Found— per cent.	Guaranteed— per cent.	
Old Gold Cotton Seed Meal.....	C	40.44	41.00	-	9.00	2357
T. H. Bunch.....	O	42.25	41.00	-	9.00	2270
	O	40.19	41.00	-	9.00	2399
	O	39.50	41.00	-	9.00	2457
	O	36.75	41.00	-	9.00	2536
	O	46.50	41.00	-	9.00	2557
Average.....	O	41.04	41.00	9.19	9.00	-
Owl Brand Cotton Seed Meal.....	C	42.75	41.00	-	9.00	2239
F. W. Brode & Co.....	C	36.25	41.00	-	7.00	2300
	D	39.50	41.00	-	7.00	2273
	O	41.83	41.00	-	7.00	2280
	O	37.19	41.00	-	7.00	2293
	O	36.06	41.00	-	7.00	2375
	O	42.63	41.00	-	7.00	2390
	O	37.94	41.00	-	7.00	2430
	O	36.44	41.00	-	7.00	2512
	O	38.06	41.00	-	7.00	2553
	O	41.00	41.00	-	7.00	2537
Average.....	O	38.10	41.00	8.74	7.00	-
Phoenix Brand Cotton Seed Meal.....	C	36.33	41.00	-	9.00	2304
D. L. Marshall Co., Boston.....	C	32.50	41.00	-	7.00	2494
	D	34.94	41.00	-	7.00	2335
	D	19.81	41.00	-	9.00	2366
	D	31.33	41.00	-	9.00	2384
	D	33.94	41.00	-	9.00	2561
	D	37.88	41.00	-	9.00	2405
	D	39.13	41.00	-	9.00	2447
	D	32.75	41.00	-	9.00	2503
	D	31.75	41.00	-	9.00	2542
	D	34.94	41.00	-	9.00	2543
	M	40.88	41.00	-	-	2423
	O	36.90	41.00	-	9.00	2314
	O	30.13	41.00	-	9.00	2344
	O	31.75	41.00	-	9.00	2374
	O	39.13	41.00	-	9.00	2413
	O	33.81	41.00	-	9.00	2455
	O	33.00	41.00	-	9.00	2475
	O	35.44	41.00	-	9.00	2485
	O	37.81	41.00	-	9.00	2511
	O	39.94	41.00	-	9.00	2558
Average.....	O	35.32	41.00	9.02	9.00	-
Cotton Seed Meal.....	C	36.56	38.60	-	-	2301
Piedmont Oil & Refining Co.....	C	38.94	38.60	-	-	2305
	D	38.13	38.60	-	-	2256
	O	39.94	38.60	-	-	2261
	O	39.00	38.63	-	-	2294
	O	39.69	38.63	-	-	2391
	O	38.50	38.63	-	-	2441
	O	40.25	38.63	-	-	2445
Average.....	O	39.36	38.63	8.98	-	-
Star Brand Cotton Seed Meal.....	C	37.00	41.00	-	9.00	2303
J. Lindsay Wells Co., Memphis.....	C	37.88	41.00	-	9.00	2306
	C	38.88	41.00	-	9.00	2334
	D	34.75	41.00	-	9.00	2246
	D	40.88	41.00	-	9.00	2249

C, from the feeder; D, from the dealer; M, from the manufacturer; and O, the inspector's sample.



*Analyses of Samples of Feeding Stuffs.*

Name of Feed and Manufacturer or Shipper.	Source of sample.	Protein.		Fat.		Station number.
		Found— per cent.	Guaranteed— per cent.	Found— per cent.	Guaranteed— per cent.	
Star Brand Cotton Seed Meal.....	D	38.56	41.00	-	9.00	2250
J. Lindsay Wells Co., Memphis.....	D	38.81	41.00	-	9.00	2251
	D	37.75	41.00	-	9.00	2252
	D	38.25	41.00	-	9.00	2253
	D	37.81	41.00	-	9.00	2254
	D	37.44	41.00	-	9.00	2255
	D	37.63	41.00	-	9.00	2257
	D	39.75	41.00	-	9.00	2258
	D	38.63	41.00	-	9.00	2299
	D	35.44	41.00	-	9.00	2336
	D	43.50	41.00	-	9.00	2332
	D	35.50	41.00	-	9.00	2333
	D	20.63	41.00	-	9.00	2496
	O	40.31	41.00	-	9.00	2286
	O	35.25	41.00	-	9.00	2292
	O	38.88	41.00	-	9.00	2319
	O	34.38	41.00	-	9.00	2433
	O	38.25	41.00	-	9.00	2444
	O	38.83	41.00	-	9.00	2452
	O	38.38	41.00	-	9.00	2473
	O	40.13	41.00	-	9.00	2481
	O	34.50	41.00	-	9.00	2517
	O	35.50	41.00	-	9.00	2522
	O	39.88	41.00	-	9.00	2528
Average.....	O	37.72	41.00	9.35	9.00	-
Sun Brand Extra Prime Cotton Seed Meal....	D	35.00	38.00	-	9.00	2386
J. Lindsay Wells Co.....	O	36.56	38.00	8.61	9.00	2466
Cotton Seed Meal.....	C	37.50	41.20	-	-	2274
L. Lindsay Wells Co.						
COTTON SEED FEED.						
Glenwood Cotton Seed Feed.....	D	23.13	22.00	5.13	5.00	2243
D. L. Marshall Co., Boston.						
Scoco Cotton Seed Feed.....	D	21.56	23.00	5.81	4.00	2259
Southern Cotton Oil Co., Memphis, Tenn.						
LINSEED OIL MEAL.						
Ground Oil Cake.....	O	31.69	30.00	10.93	7.00	2295
Red Wing Linseed Mills.						
Linseed Oil Meal.....	O	35.88	38.00	-	1.00	2271
American Linseed Oil Co.....	O	35.19	36.00	-	1.00	2291
	O	35.19	36.00	-	1.00	2296
	O	36.06	36.00	-	1.00	2343
	O	34.19	36.00	-	1.00	2345
	O	34.75	36.00	-	1.00	2410
	O	36.31	36.00	-	1.00	2435
	O	35.63	36.00	-	1.00	2459
	O	35.13	36.00	-	1.00	2478
	O	36.13	36.00	-	1.00	2514
Average.....	O	35.45	36.00	3.43	1.00	-
Old Process Linseed Meal.....	O	35.75	32.00	8.27	5.00	2549
American Linseed Oil Co.						

C. from the feeder; D, from the dealer; M, from the manufacturer; and O, the inspector's sample.

*Analyses of Samples of Feeding Stuffs.*

Name of Feed and Manufacturer or Shipper.	Source of sample.	Protein.		Fat.		Station number.
		Found — per cent.	Guaranteed per cent.	Found — per cent.	Guaranteed per cent.	
Old Process Linseed Meal.....	O	36.13	35.95	8.30	6.51	2516
Henenstein & Co.						
GLUTEN FEED AND MEAL.						
Bay State Gluten Feed.....	O	20.44	24.00	-	3.00	2263
J. E. Soper & Co., Boston.....	O	20.38	24.00	-	3.00	2401
	O	23.13	24.00	-	3.00	2548
Average.....	O	21.32	24.00	2.83	3.00	-
Buffalo Gluten Feed.....	D	25.25	25.00	-	2.50	2297
Glucose Sugar Refining Co.....	O	22.69	25.00	-	2.50	2281
	O	24.13	24.00	-	-	2378
	O	23.69	24.00	-	2.50	2393
	O	25.63	25.00	-	2.50	2431
	O	25.00	25.00	-	2.50	2438
	O	23.56	24.00	-	2.50	2442
	O	26.69	25.00	-	2.50	2456
	O	24.38	25.00	-	2.50	2482
	O	25.63	25.00	-	2.50	2509
	O	24.38	24.00	-	2.50	2523
	O	25.00	25.00	-	2.50	2551
Average.....	O	24.62	-	5.10	2.50	-
Continental Gluten Feed.....	O	31.00	35.00	-	12.00	2434
Continental Cereal Co.						
Jenks Gluten Feed.....	O	21.94	27.00	-	7.50	2283
Huron Milling Co.....	O	26.00	27.00	-	7.50	2422
	O	28.06	27.00	-	7.50	2531
Average.....	O	25.33	27.00	11.95	7.50	-
Jenks Gluten Meal.....	O	38.88	36.00	8.00	5.00	2268
Huron Milling Co.						
Tiger Gluten Feed.....	O	24.94	25.00	5.15	2.75	2356
St. Louis Syrup & Preserving Co.						
Warner's Gluten Feed.....	D	27.06	25.00	-	3.00	2298
Warner Sugar Refining Co., Waukegan, Ill.	O	25.50	25.00	-	3.00	2309
	O	24.88	25.00	-	2.50	2322
	O	23.44	24.00	-	2.50	2409
	O	25.50	24.00	-	2.50	2426
	O	24.50	24.00	-	2.50	2469
Average.....	O	24.76	24.00	4.98	2.50	-
DISTILLERS' GRAINS.						
Anchor Distillers' Grains.....	O	15.88	15.00	-	8.00	2379
C. A. Krause Grain Co.....	O	15.75	15.00	-	8.00	2484
	O	15.75	15.00	-	8.00	2535
Average.....	O	15.80	15.00	3.95	8.00	-
Ajax Flakes.....	O	34.25	33.00	-	12.00	2325
Ajax Milling & Feed Co.....	O	30.53	33.00	-	12.00	2387
	O	32.00	33.00	-	12.00	2389
	O	29.50	33.00	-	12.00	2400
	O	31.56	33.00	-	12.00	2458
	O	35.00	33.00	-	12.00	2539
Average.....	O	32.14	33.00	14.68	12.00	-

C, from the feeder; D, from the dealer; M, from the manufacturer; and O, the inspector's sample.

*Analyses of Samples of Feeding Stuffs.*

Name of Feed and Manufacturer or Shipper.	Source of sample.	Protein.		Fat.		Station number.
		Found— per cent.	Guaranteed— per cent.	Found— per cent.	Guaranteed— per cent.	
Fourex -----	O	32.50	33.00	-	11.00	2310
J. W. Biles & Co.-----	O	30.38	33.00	-	11.00	2317
	O	29.44	33.00	-	11.00	2394
	O	31.06	33.00	-	11.00	2454
	O	33.56	33.00	-	11.00	2464
	O	33.13	33.00	-	11.00	2489
	O	31.13	33.00	-	11.00	2527
Average-----	O	31.60	33.00	13.63	11.00	-
BREWERS' GRAINS.						
Brewers' Grains -----	O	30.56	24.00	-	7.50	2342
Anheuser-Bush Brewery Assn.-----	O	23.63	24.00	-	7.50	2381
Average-----	O	27.10	24.00	8.00	7.50	-
Brewers' Grains -----	C	20.38	25.00	-	7.00	2544
C. A. Krause Grain Co.-----	D	24.44	25.00	-	7.00	2493
	O	25.38	25.00	7.03	7.00	2483
MISCELLANEOUS NITROGENOUS FEEDS.						
Alfalfa Meal -----	O	21.31	20.00	4.48	4.00	2416
Flint Mill Co.						
H-O Butter Feed-----	O	19.94	18.00	5.08	4.50	2235
H-O Company, Buffalo, N. Y.						
Protana Dairy Feed-----	O	19.75	20.00	-	3.50	2425
Purina Mills -----	O	20.13	20.00	-	3.50	2529
Average-----	O	19.94	20.00	5.05	3.50	-
Purina Mill Feed Alfalfa Meal-----	O	15.38	16.00	2.07	2.40	2510
Ralston Purina Mills, St. Louis.						
Rye Protegran -----	M	21.69	22.00	6.33	10.00	2247
Union Grains -----	C	24.55	24.00	-	7.00	2448
J. W. Biles Co.-----	O	23.81	24.00	-	7.00	2267
	O	23.31	24.00	-	7.00	2341
	O	23.63	24.00	-	7.00	2453
	O	23.25	24.00	-	7.00	2513
	O	23.44	24.00	-	7.00	2545
Average-----	O	23.41	24.00	7.63	7.00	-
Wonder Poultry Feed-----	O	19.69	22.00	6.73	4.00	2316
Flint Milling Co.						
MOLASSES AND SUGAR FEEDS.						
Green Diamond Sugar Feed-----	O	15.50	16.50	2.86	3.50	2323
Chapin & Co.						
Hammond Dairy Feed-----	O	14.81	17.00	6.63	3.00	2349
Western Grain Products Co.						
Molasses Grains -----	C	18.44	23.00	4.68	-	2260
E. P. Mueller, Milwaukee, Wis.						

C, from the feeder; D, from the dealer; M, from the manufacturer; and O, the inspector's sample.

† Protein and fat.

*Analyses of Samples of Feeding Stuffs.*

Name of Feed and Manufacturer or Shipper.	Source of sample.	Protein.		Fat.		Station number.
		Found - per cent.	Guaranteed per cent.	Found - per cent.	Guaranteed per cent.	
Molac Molasses Dairy Feed.....	O	14.13	16.00	-	3.00	2272
American Cereal Co.....	O	14.63	15.50	-	3.00	2415
	O	16.81	16.00	-	3.00	2520
Average.....	O	15.19	-	6.18	3.00	-
Sucrene Dairy Feed.....	O	16.50	16.50	-	3.50	2289
American Milling Co.....	O	17.63	18.50	-	3.50	2532
Average.....	O	17.07	16.50	6.6	3.50	-
CORN AND OAT FEEDS.						
Boss Corn and Oat Feed.....	O	7.94	8.50	6.75	3.50	2278
Great Western Cereal Co.						
Durham Corn and Oat Feed.....	O	8.88	8.27	5.88	3.64	2377
Great Western Cereal Co.						
Empire Feed for Stock.....	C	8.00	7.63	-	3.97	2358
Empire Mills, Olean, N. Y.....	O	8.25	7.63	-	3.97	2265
	O	8.63	7.63	-	3.97	2468
	O	8.50	7.63	-	3.97	2519
	O	8.50	7.63	-	3.97	2521
	O	8.75	7.63	-	3.97	2559
Average.....	O	8.52	7.63	5.43	3.97	-
Haskell's Stock Feed.....	D	8.75	10.00	-	6.25	2504
W. H. Haskell Co.....	O	8.88	10.00	-	6.25	2294
	O	8.04	10.00	-	6.25	2320
	O	9.00	10.00	-	6.25	2510
Average.....	O	8.76	10.00	-	6.25	2524
	O	8.67	10.00	7.58	6.25	-
Ideal Corn and Oat Feed.....	C	8.19	9.00	-	3.28	2359
E. T. & H. K. Ide, St. Johnsbury, Vt.....	O	7.94	9.00	-	3.28	2554
Average.....		-	-	5.23	3.28	-
N-E-Stock-Food.....	O	10.00	9.00	5.83	4.00	2460
H O Company Mills, Buffalo.						
O. O. Yellow Feed.....	O	10.25	10.51	7.38	5.75	2370
Diamond Elevator & Milling Co.						
Pearl Cooked Horse and Cow Feed.....	O	8.25	10.00	-	6.00	2287
Flint Milling Co.....	O	8.81	10.00	-	6.00	2432
Average.....	O	8.53	10.00	5.75	6.00	-
Pioneer Corn, Oats and Barley Feed.....	O	11.44	13.00	-	3.50	2321
Pioneer Cereal Co.....	O	11.13	13.00	-	3.50	2526
Average.....	O	11.28	13.00	4.55	3.50	-
Schumacher's Stock Feed.....	C	10.00	11.00	-	4.00	2385
American Cereal Co.....	O	9.00	11.00	-	4.00	2360
	O	10.19	11.00	-	4.00	2376
	O	9.25	11.00	-	4.00	2392
	O	10.19	11.00	-	4.00	2414

C. from the feeder; D, from the dealer; M, from the manufacturer; and O, the inspector's sample.

*Analyses of Samples of Feeding Stuffs.*

Name of Feed and Manufacturer or Shipper.	Source of sample.	Protein.		Fat.		Station number.
		Found— per cent.	Guaranteed— per cent.	Found— per cent.	Guaranteed— per cent.	
Schumacher's Stock Feed-----	O	10.13	11.00	-	4.00	2428
American Cereal Co.-----	O	9.25	11.00	-	4.00	2518
	O	10.25	11.00	-	4.00	2530
	O	8.94	11.00	-	4.00	2556
Average-----	O	9.65	11.00	4.85	4.00	-
Sunshine Feed-----	D	15.88	15.00	-	4.00	2506
Hunter Bros. Milling Co., St. Louis.						
Victor Corn and Oat Feed-----	O	8.81	9.00	-	4.00	2318
American Cereal Co.-----	O	7.25	9.00	-	4.00	2339
	O	8.00	9.00	-	4.00	2429
	O	8.13	7.50	-	3.00	2515
	O	7.25	9.00	-	4.00	2555
Average-----	O	7.89	-	4.22	4.00	-
Victoria Chop-----	O	7.56	8.11	-	3.05	2534
Royce & Coon Grain Co., Bowling Green, O.	O	7.63	8.11	-	3.05	2538
Average-----	O	7.60	8.11	4.48	3.05	-
OAT FEEDS.						
O. M. Feed Regular-Oat Feed-----	O	6.38	6.00	-	2.00	2418
Chas. M. Cox Co.-----	O	6.75	6.00	-	2.00	2420
	O	6.75	6.00	-	2.00	2474
Average-----	O	6.63	6.00	3.84	2.00	-
HOMINY FEEDS.						
Keystone Hominy Feed-----	O	10.25	10.50	8.63	7.90	2351
M. F. Baringer.						
Wirthmore Hominy Feed-----	O	9.69	9.50	-	7.50	2350
Chas. M. Cox Co.-----	O	11.38	9.50	-	7.50	2388
	O	12.88	9.50	-	7.50	2436
Average-----	O	11.32	9.50	10.55	7.50	-
MISCELLANEOUS STARCHY FEEDS.						
Flaked Wheat Feed-----	O	13.63	12.00	-	1.75	2346
Quaker Oats Co.						
Peerless Mixed Feed-----	C	14.38	15.22	-	5.47	2354
(Not a wheat product)-----	O	14.25	15.22	-	5.47	2380
	O	14.19	15.22	-	5.47	2525
Average-----	O	14.22	15.22	4.65	5.47	-
Queen Stock Feed-----	O	8.88	9.20	4.78	4.10	2480
Brown Milling Co.						
"Sharps" Middlings-----	C	14.88	-	-	-	2492
WHEAT OFFALS.						
Acme Feed-----	O	16.69	-	-	-	2490
Acme Milling Co., Indianapolis.						
Acme Mixed Feed-----	O	13.56	-	-	-	2371
J. H. Hale & Sons-----	O	14.44	-	-	-	2476
Badger Flour Middlings-----	O	16.33	17.00	-	4.00	2326
Berger Crittenden Milling Co.						

C, from the feeder; D, from the dealer; M, from the manufacturer; and O, the inspector's sample.



*Analyses of Samples of Feeding Stuffs.*

Name of Feed and Manufacturer or Shipper.	Source of sample.	Protein.		Fat.		Station number.
		Found— per cent.	Guaranteed— per cent.	Found— per cent.	Guaranteed— per cent.	
Blish White Middlings..... Blish Milling Co.	D	15.38	-	-	-	2328
Stotts Bran .....	O	15.33	-	-	-	23 8
David Stotts Flouring Mills, Detroit.						
Adrian Pure Winter Wheat Bran..... Detroit Milling Co.	O	14.56	-	-	-	2327
Shorts .....	O	15.38	12.00	-	3.00	2340
Dwight Flour Mills, Minn.						
Fancy Middlings .....	O	18.19	15.00	-	3.00	2369
Geo. Tileston Milling Co.						
Fancy Low Grade Flour..... Geo. Tileston Milling Co.	D	16.50	-	-	-	2501
Hubbard's Fancy Flaked Bran..... Hubbard Milling Co.	O	14.63	14.50	-	4.80	2368
Standard Fine Middlings..... Hubbard Milling Co.	O	18.56	14.00	-	5.10	2372
Pure Winter Wheat Bran..... Hunter Bros. Milling Co.	O	15.38	14.00	-	3.50	2315
	O	16.00	14.00	-	3.50	2347
	O	14.38	14.00	-	3.50	2471
Security Mixed Feed..... Hunter Bros.	O	15.88	15.00	-	4.00	2367
Sunshine Mixed Feed..... Hunter Bros.	O	16.50	15.00	-	4.00	2232
	O	15.63	15.00	-	4.00	2348
Boston Mixed Feed..... Imperial Milling Co.	O	16.31	16.00	-	4.50	2290
Pyramid Mixed Feed.....	O	15.56	-	-	-	2437
Lexington Mixed Feed..... Lexington (Ky.) Roller Mills Co.	O	15.19	-	-	-	2477
Bran .....	O	15.25	14.25	-	4.00	2412
Northwestern Con. Milling Co.						
Fancy Feed .....	C	17.38	-	-	-	2495
Oakes Milling Co., Oakes, N. D.						
Esmeralda Mixed Feed..... Ohio Cereal Co., Cincinnati.	O	17.00	-	-	-	2407
Esmeralda Bran .....	O	15.63	15.10	-	3.45	2408
Champion Mixed Feed..... Portland Milling Co.	O	15.63	-	-	-	2373
Monarch Ground Wheat Feed..... F. W. Stock & Sons.	O	16.56	-	-	-	2395

C, from the feeder; D, from the dealer; M, from the manufacturer; and O, the inspector's sample.

*Analyses of Samples of Feeding Stuffs.*

Name of Feed and Manufacturer or Shipper.	Source of sample.	Protein.		Fat.		Station number.
		Found— per cent.	Guaranteed— per cent.	Found— per cent.	Guaranteed— per cent.	
Farmers' Favorite Mixed Winter Wheat Cow Feed ----- Valley City Milling Co.	O	15.19	-	-	-	2352
Michigan Winter Wheat Bran----- Valley City Milling Co.	O	15.25	-	-	-	2450
Mixed Feed ----- Voight Milling Co., Grand Rapids.	D	15.25	-	-	-	2262
Voight's Winter Mixed Feed----- Voight Milling Co., Grand Rapids.	O	15.13	-	-	-	2396
Voight's Middlings ----- Voight Milling Co., Grand Rapids.	O	15.38	-	-	-	2397
Pillsbury's B Middlings----- Washburn-Pillsbury Co.	O	17.00	14.00	-	4.50	2324
ADULTERATED WHEAT OFFALS.†						
Indiana Mixed Feed-----	C	11.33	12.05	-	3.20	2491
Indiana Milling Co.-----	O	10.83	12.05	-	3.20	2279
	O	11.00	12.05	-	3.20	2462
	O	13.50	12.05	-	3.20	2533
	O	13.25	12.05	-	-	2541
Average-----	O	12.16	12.05	4.15	3.20	-
Jersey Mixed Feed-----	O	12.56	12.05	-	3.20	2266
Indiana Milling Co.-----	O	11.25	12.05	-	3.20	2461
Average-----	O	11.91	12.05	4.08	3.20	-
BEEF SCRAPS.						
Beef Scraps ----- American Agricultural Chemical Co.	O	51.94	30.00	17.40	20.00	2411
First Grade Beef Scraps----- Carrol S. Page, Hyde Park, Vt.	M	64.56	60.00	29.30	22.00	2365
Beef Scraps ----- Portland Rendering Co.	O	42.00	40.00	18.30	15.00	2284

C, from the feeder; D, from the dealer; M, from the manufacturer; and O, the inspector's sample.

†The sale of adulterated wheat offals is lawful when the "adulteration thereof is plainly marked or indicated upon the packages."



## COTTONSEED MEAL.

Analyses pages 95-97.

Cottonseed meal is a by-product from the manufacture of cottonseed oil. After the cotton has been taken from the seed in the cotton gin, the remaining down or "linters" and the hard black seed coats or hulls are removed by machinery. The remainder of the seed is cooked and the oil expressed by high pressure. The resulting cottonseed cake is ground into the bright, yellow cottonseed meal of commerce. Such a meal made from good seed would carry from 40 to 50 per cent of protein. With improvements in the process of manufacture, it is now possible to extract the oil without making all the separations formerly needed. Hence it has come about that the cottonseed meal now offered in the market is as a rule of lower protein content than was the case 10 years ago.

The shippers of cottonseed meal up to about two years ago guaranteed 43 per cent protein and 9 per cent fat. A large part of the cottonseed meal is used for fertilizing purposes and its nitrogen is guaranteed in the form of ammonia. The Interstate Cotton Seed Crushers Association in May, 1906, established the following grades for cottonseed meal.

*Choice* cottonseed meal must be finely ground, perfectly sound and sweet in odor, free from excess of lint and hulls and by analysis must show at least 8 per cent ammonia, equivalent to 41.15 per cent protein.

*Extra prime* cottonseed meal must be finely ground, of sweet odor, reasonably bright in color, yellow not brown or reddish, and by analysis must contain at least 7.5 per cent of ammonia, equivalent to 38.50 per cent protein.

*Prime* cottonseed meal must be finely ground of sweet odor, reasonably bright in color and by analysis must contain at least 7 per cent ammonia, equivalent to 36 per cent protein.

"*Off*" meal is any cottonseed meal which is distinctly deficient in any of the requirements of prime quality, either in color, odor, texture or analysis, or all. "Off" meal should only be sold by sample.

As is shown in the table on page 112, there is about 2 dollars a ton difference in value between each of these grades of cottonseed meal as a source of protein. Choice cottonseed meal at \$32 a ton is as economical a source of protein as prime meal at 28 dollars per ton. The cost of protein in each case would be 3.9 cents a pound.

The hulls and cotton which should be removed from the seed before it is crushed and pressed, have but little feeding value. A little of these materials has always been present in the meal; with the present processes of manufacture, there is probably more of these materials present than formerly. The demand from feeders for cottonseed meal has so increased the value of this by-product, that the temptation to include as much of the hulls and cotton as practicable is great. The processes of manufacture in different mills also vary so that the meal from some mills will contain more of the dark hulls which gives the dark colored meal of inferior feeding value.

Strictly first-class cottonseed meal is always bright and yellow and should have a pleasant nutty flavor. Not all dark colored cottonseed meal is necessarily adulterated. The spontaneous heating of the seed in the field, or over cooking of the "meats" may render the meal dark in color without changing its composition. Such meal is not first quality, however, and should be sold at a lower price.

Because of the differences in the behavior of hulls, the finely ground cottonseed meal, and the cotton when wet up with water, the presence of undue amounts of hull and cotton can be readily detected by stirring a little of the meal in a tumbler of water. The hulls, unless they are very finely ground, settle out first and on top of these will come the finer portions of the meal, and finally the cotton by itself. By testing a meal of high grade in comparison with a poor quality meal, one can so familiarize himself with this test as to quite readily and accurately distinguish the quality of cottonseed meal.

The cottonseed meal situation has been a very unfortunate one in Maine the present year. In the late fall the cotton crop was very seriously damaged by a storm which resulted in a smaller yield of cottonseed than was anticipated, and also made considerable dark colored meal. This shortage materially advanced the price of choice cottonseed meal and increased the

quantity of meal that was below prime in quality. Apparently the orders for meal were solicited by out of state dealers, in Maine during the summer of 1906. The offers were made and the orders placed at a low price so that when it came time to deliver the goods, choice cottonseed meal had advanced materially beyond this price. Apparently these Maine orders, in many instances, were filled from inferior goods. Evidently the dealers in Maine were imposed upon, and the jobbing houses claim that they were also imposed upon and that they were not aware that the meal which they were giving to their Maine customers was of such bad quality. Many of the dealers, as soon as they received the meal, submitted samples to the Station for analysis and wherever the analysis has shown the material to be inferior the dealers have promptly changed the guarantees upon the goods which they had in stock, to correspond with fact. As there was no evidence that there was any intentional fraud on the part of Maine dealers, no prosecutions have been made; the trouble apparently lying entirely outside of the State. As the market is becoming exhausted of these summer bought goods, cottonseed meal of much better quality is now appearing, samples having been submitted which carry as high as 46 per cent protein.

The meal bearing the tags of Kaiser & Brown, Memphis, and one lot of Phoenix brand and one dealers sample of Star brand cottonseed meal were particularly bad goods, having about the composition of so-called Sea Island cottonseed meal, and closely resembling cottonseed feed in appearance. The great majority of the cottonseed meals sold in the State during the late fall and early winter seem to run about as prime meal instead of choice as the dealers were expecting.

#### COTTONSEED FEED.

#### Analyses page 97.

Two samples of cottonseed feed were sent to the Station by dealers. These were approximately correctly guaranteed as to their percentages of protein and fat. They are, however, not economical feeds unless they can be bought for half the price of choice cottonseed meal. A ton of choice cottonseed meal carries 820 pounds of total and 680 pounds of digestible protein and while a ton of cottonseed feed carries 440 pounds of total, it has only 340 pounds digestible protein.

## LINSEED MEAL.

Analyses pages 97 and 98.

Linseed meal is made by grinding flax seed from which the oil has been more or less completely removed. Most of the oil meal now on the market is new process meal in which the fat is removed by the use of naphtha. New process linseed meal is generally somewhat lower in fat and higher in protein than old process. The amount of linseed oil meal found in the market in Maine has considerably increased. This is probably due to the poor quality of the cottonseed meal. Linseed oil meal is a safer and in some respects a better feed than cottonseed meal. The small amount available and its formerly higher price, led to its lessened use. It will be noted that the goods run quite nearly in accordance with the guarantees.

## GLUTEN MEALS AND FEEDS.

Analyses page 98.

Gluten meals and feeds are the by-products left in the manufacture of starch and glucose from Indian corn. Corn consists largely of starch. The waste product in the manufacture of starch and sugar is relatively richer in oil and protein than is corn. Most factories remove part of the corn oil from the waste so that nearly all the gluten meals carry less oil than they did a few years ago.

Gluten feeds differ from gluten meals in that they contain considerably more of the corn bran and hence relatively less protein, fat and digestible carbohydrates, and more of the indigestible woody fiber. Gluten products which were formerly quite extensively used in Maine, came to be regarded as rather unsatisfactory forms of concentrated feeds, chiefly because of their uneven composition.

The gluten products are desirable sources of protein and now that the manufacturers are placing guarantees upon their goods, much more nearly corresponding to fact, this class of feeding stuffs may become again as popular as they were a few years ago. There is apparently much more of the Buffalo gluten feed used in Maine than other makes and it will be noted that this runs pretty even in composition and for the most part well up

to guarantee. The Bay State gluten feed did not come up to its guarantee. The Jenks gluten feed is guaranteed higher than the other gluten feeds but the 3 samples examined varied greatly in composition,—one falling markedly below, while the two other samples were practically in accord with the guarantee. A good gluten feed can be expected to carry about 24 per cent protein. Only two lots of gluten meal were found in the State.

#### DISTILLERS GRAINS.

Analyses pages 98 and 99.

In composition, dried distillers grains resemble the gluten feeds. They are derived from corn from which the starch is removed by fermentation. They are more bulky than the gluten feeds and for the most part run higher in protein. A feeding test with distillers grains was reported in Bulletin 92 of this Station. The Anchor Distillers Grains are low grade goods and it is hoped that they will not be offered further in the State. Ajax Flakes and Fourex are running a little below their guarantees in protein, but are well up in fat.

#### BREWERS GRAINS.

Analyses page 99.

Brewers Grains are not largely used or sold in Maine. The two brands that were offered in the State were of good quality, free from acidity and were up to their guarantees in protein and in fat.

#### MISCELLANEOUS NITROGENOUS FEEDS.

Analyses page 99.

The Union Grains are quite largely used in the State. It is probable that the other nitrogenous feeds here classed are not so extensively used. It is interesting to note, however, that practically all of these feeding stuffs come up to their guarantees. A feeding test with Union Grains was reported in bulletin 106 of this Station.



## MOLASSES AND SUGAR FEEDS.

Analyses pages 99 and 100.

Feeding experiments with molasses feeds have shown them to be fairly economical. They, however, are not used very much in this State and should not be purchased by the ordinary farmer since they are low in protein and high in carbohydrates. Feeders who find it necessary to purchase nearly all of their food may find these molasses feeds economical.

The molasses and sugar feeds carry on the average about 15 to 16 per cent of protein. It is to be remembered, however, that this class of feeds are sold not as a source of protein but for the soluble carbohydrates which they carry, and the lower protein means more of the carbohydrates. The Molac Molasses Dairy feed in two instances fell below the guarantee. Sucrene Dairy feed was up to the guarantee.

## REFUSES FROM MILLING OATS, CORN, ETC.

Analyses pages 100 and 101.

The market still carries a large number of oat feeds, corn chops, corn and oat feeds and similar offals by themselves and blended with concentrated feeds. They vary in composition from the straight oat hull refuse with perhaps 6 per cent protein, to the blends that carry from 15 to 18 percent of protein. For the most part these goods are fairly well up to their guarantee and no fault can be found with the manufacturer for desiring to sell these waste products. Few or no claims are made for nutrients which the goods do not actually carry. The feeder has himself to blame if, with barns filled with hay, corn stalks and silage, he buys feeds low in protein instead of those high in protein. An oat feed with 6 per cent protein is no better feed nor is it any better digested than a coarse fodder with the same protein content. This class of foods can probably be economically used only by feeders who find it necessary to buy "roughage" as well as concentrates.

Many of these corn and oat feeds run up to the guarantee, but others of them, such as Haskell's Stock feed, Shumachers Stock feed, and Victor Corn and Oat feed run constantly below their guarantee in protein. Why anyone should care to buy a

feeding stuff like the O. M. Feed Regular (Oat feed) with about the same protein content as oat straw, is difficult to understand.

#### WHEAT BRAN AND MIDDINGS.

##### Analyses pages 101-103

The refuses from the milling of wheat vary, as is to be expected, quite largely in composition. A good quality mixed feed or wheat bran should carry 15 per cent protein and as noted in the table some of them ran considerably above that. While the feeding stuffs law of this State does not require straight wheat refuses to be guaranteed many of the manufacturers are now placing guarantees for both protein and fat upon the various wheat offals.

There is no class of feeding stuffs in which the consumer needs to use greater care at present than in the purchase of mixed feeds. While the regular brands are all right, as they have been in the past, there are some spurious articles in the market.

There is so much profit in selling ground corn cobs and broom corn at the price of wheat bran that the consumer must ever be on the watch against this fraud. The safest thing is to buy only well known, reliable brands of this class of goods. The bulletin gives the names and analyses of many manufacturers of high class brans and other wheat offals. If consumers will see to it that all of this class of feeds which they buy carries the name of the miller there will be little likelihood of their being defrauded. In case of any doubt, mail a sample to the Station and an analyses will be made and the results reported promptly and without charge.

#### ADULTERATED WHEAT OFFALS.

##### Analyses page 103.

With the exception of the mixed feeds from Kentucky, sold chiefly under the names of Jersey mixed feed and Indiana mixed feed, no adulterated wheat offals have been found upon the market. Most of these goods offered in the State are properly tagged, carrying not only the percentage of protein and fat, but the statement of their composition showing the



materials that have been added to the wheat bran. In only one instance, and that is now being investigated, has there apparently been fraud in the offering of these adulterated feeds. Their sale is perfectly proper under the law when they are correctly labeled. There is, however, practically no feeding value in corn cobs and as these adulterated wheat offals are sold for only one dollar or so per ton below the price of a straight wheat bran, they are expensive feeds.

#### BEEF SCRAPS.

Analyses page 103.

Ground beef scraps are used chiefly for feeding poultry and while they are more or less generally distributed, the sales are small as compared with other materials coming under the feeding stuffs law. In some instances, at any rate, the guarantee as placed upon the goods is only a very general guide to the actual composition.

#### THE KIND OF CONCENTRATED FEEDING STUFFS TO PURCHASE.

The crops grown upon the farm are rich in carbohydrates and poor in protein. Clover will help supply the needed protein, and home grown grains will help out toward a balanced ration. But after growing all the food that can be produced economically on the farm, the dairyman will usually find that he needs to supplement the home grown food by the purchase of concentrated commercial feeding stuffs.

As the farm produces or can be made to produce all the starch, sugar and fiber that are needed, it is not necessary to take these constituents into account in the purchase of supplementary food materials. While they have a part, and a necessary part, in the ration, it is protein that is needed to supplement the home grown foods, hence the cost per pound of the protein in a given feeding stuff is of more importance than the ton price. A ton of cottonseed meal costs more than a ton of oat feed, but the protein in the former costs less than 4 cents a pound and 10 or more in the other. The table on the following page shows the number of pounds of protein that a ton of a few average feeding stuffs carries, and the cost of a pound of protein at the usual range in selling price.

*Cost of one pound protein in different feeding stuffs at different prices per ton.*

Kind of feeding stuff.	Protein in ton.	At \$18 per ton.	At \$20 per ton.	At \$26 per ton.	At \$28 per ton.	At \$30 per ton.	At \$32 per ton.
	Pounds.	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.
Choice cottonseed meal....	820	.....	.....	.....	3.3	3.6	3.9
Extra prime cottonseed meal .....	770	.....	.....	.....	3.6	3.9	4.2
Prime cottonseed meal ....	720	.....	.....	3.6	3.9	4.2	4.5
Cottonseed feed.....	440	4.1	4.6	6.0	6.5	.....	.....
New process linseed meal .	750	.....	.....	3.4	3.7	4.0	4.3
Old process linseed meal ..	640	.....	.....	4.1	4.4	4.7	5.0
Gluten meal.....	680	.....	.....	3.8	4.1	4.4	4.7
Gluten feed.....	520	.....	.....	5.0	5.4	5.8	.....
Distillers grains .....	660	.....	.....	3.9	4.2	4.5	4.8
Union grains ....	480	.....	.....	5.4	5.8	6.2	.....
Wheat middlings .....	360	5.0	5.4	.....	.....	.....	.....
Wheat bran .....	300	6.0	5.7	.....	.....	.....	.....
Jersey mixed feed.....	240	7.5	8.3	.....	.....	.....	.....
Oat feed 7.5 per cent protein	150	12.0*	.....	.....	.....	.....	.....

\* At \$12 per ton, a pound of protein will cost 8 cents.

## FREE ANALYSIS OF FOODS, FEEDS, FERTILIZERS, AND SEEDS.

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The Station takes pains to obtain for analysis samples of all brands of fertilizers and feeding stuffs coming under the law. It also draws samples of agricultural seeds and foods in the hands of dealers. The co-operation of dealers and consumers is, however, essential for the full and timely protection of their interests.

*Foods.* Dealers and consumers are invited to send by prepaid express original and unbroken packages of food materials on sale in Maine of whose purity they are for any reason suspicious. As prompt free analysis will be made of such samples as circumstances will allow.

*Feeding Stuffs.* The Station will promptly analyze samples of feeding stuffs sold in Maine taken in accordance with directions which will be furnished on application. The results will be reported without charge to interested parties. This applies to dealers and consumers alike.

*Commercial Fertilizers.* It is difficult to draw accurate samples of commercial fertilizers. On this account it is only in rare instances that the Station undertakes analyses of fertilizers other than the samples collected by its representative. In case there is special reason for an examination, the Station invites correspondence on the subject.

*Agricultural Seeds.* Samples of agricultural seeds on sale in Maine, taken in accordance with directions which can be obtained on application to the Station, will be examined as promptly as possible and the results reported free of charge.

In all cases samples should be accompanied by a full description of the goods, including the name and address of the dealer and the sender. Small samples other than liquids can be forwarded by mail. Others should be forwarded by express, charges prepaid. Both mail and express matter should be addressed to the

AGRICULTURAL EXPERIMENT STATION,

Orono, Maine.

## FREE ANALYSIS OF FEEDING STUFFS.

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The Station officers take pains to obtain for analysis samples of all feeding stuffs coming under the law, but the co-operation of consumers is essential for the full and timely protection of their interests. Whenever anyone believes that this law is being evaded in any way, he is requested to notify the Director of the Station.

The Station will promptly analyze samples of feeding stuffs sold in Maine taken in accordance with the following directions, and report the results without any charge to the interested parties. Dealers and consumers are urged to avail themselves of this offer.

### DIRECTIONS FOR SAMPLING.

The sample should fairly represent the feeding stuff and is best obtained as follows:

Open one or more full and unbroken packages, and mix well together the contents of each for a foot in depth, take out three cupfuls from different parts of the mixed portions of each package, pour them one over another upon a paper, intermix thoroughly, and fill a tin spice or baking powder box from the mixture. Upon paper plainly write (1) the name of the goods; (2) the name of the manufacturer; (3) the guaranteed percentages of protein and fat; (4) the name and address of the dealer; and (5) the name and address of the sender. Securely wrap the box and description of sample in paper and send by mail to the

Agricultural Experiment Station,

Orono, Maine.